

claims

1. Highly oxidation resistant component (1),  
having a substrate (4),  
5 a protective layer (17),  
which consists of  
an intermediate MCrAlY layer zone (16) on or near the substrate (4),  
wherein M is at least one element out of the group Co, Fe, Ni,  
and an outer layer zone (19)  
10 which is onto the intermediate MCrAlY layer zone (16),  
which consists at least of the elements Ni and Al and possesses the  
structure of the phase  $\beta$ -NiAl, and  
whereby the Al content lays in the range between 21wt% and 37wt%,  
whereby the outer layer (19) contains further alloying elements,  
15 especially chromium and/or cobalt,  
which do not destroy the phase  $\beta$ -NiAl.
2. Highly oxidation resistant component according to claim 1,  
20 wherein the protective layer (17) consists of two separated layers  
(16, 19).
3. Highly oxidation resistant component according to claim 1,  
25 with a continuously graded concentration of the composition of the  
intermediate and outer zone (16, 19) inside the protective layer  
(17).
- 30 4. Highly oxidation resistant component according to claim 1,  
wherein the outer layer zone (19) is thinner than the intermediate  
layer (16) on or near the substrate (4).
- 35 5. Highly oxidation resistant component according to claim 1,  
wherein the intermediate MCrAlY-layer zone (16) has the composition

(in wt%): 10% - 50% Co, 10% - 40% Cr, 6% - 15% Al, 0,02% - 0,5% Y, Ni base.

- 5    6. Highly oxidation resistant component according to claim 1,  
wherein the intermediate MCrAlY-layer (16) or the outer layer zone  
(19) contains at least one further element such as (in wt%): 0,1% -  
2% Si, 0,2% - 8% Ta or 0,2% - 5% Re.
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7. Highly oxidation resistant component according to claim 1,  
wherein the Yttrium of MCrAlY of the intermediate MCrAlY zone (16) or  
the outer zone (19) is added and/or at least partly replaced by at  
least one element out of the group Hf, Zr, La, Ce and/or other  
15    elements of the Lanthanide group.
8. Highly oxidation resistant component according to claim 1,  
wherein the outer zone (19) is added at least one additional element  
20    out of the group Hf, Zr, La, Ce or other elements of the Lanthanide  
group.
9. Highly oxidation resistant component according to claim 8,  
25    wherein the maximum amount of further additions is 1wt%.
10. Highly oxidation resistant component according to claim 1,  
wherein the MCrAlY layer zone (16, 19) contains Ti (Titanium) and/or  
30    Sc (Scandium).
11. Highly oxidation resistant component according to claim 1,  
wherein on the outer layer zone (19) a thermal barrier coating (13)  
35    is formed.

12. Highly oxidation resistant component according to claim 11,  
wherein a heat treatment prior to applying a thermal barrier coating  
is carried out  
in an atmosphere with a low oxygen partial pressure,  
5 especially at  $10^{-7}$  and  $10^{-15}$  bar.